

REMARKS

1. The Patent Office Action of April 28, 2008 is hereby acknowledged. The shortened statutory period of three (3) months time period for response to the Office Action expired on July 28, 2008. Concurrently with the filing of this Continuation Application, the Applicants have requested an one-month extension of time and have paid the required RCE fee of \$405.00. Accordingly, the deadline to now file the Amendment is August 28, 2008. This Continuation Application is being mailed by United States Express Mail, Express Mail Label No. EM 303322161 US in a postage paid envelope addressed to MAIL STOP RCE, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on August 25, 2008. Therefore, this Amendment is timely filed. In the event that the Commissioner for Patents should determine that any additional fee is required for this Amendment to be timely filed and an appropriate fee is due for that extension of time, then the Commissioner for Patents is hereby authorized to charge Deposit Account Number 18-2222 for such appropriate fee.

2. The original '101 Application had a total of 22 claims wherein one was an independent claim. Through the prior Preliminary Amendment dated August 06, 2006, the '101 Application had 21 total claims with one independent claim. The '101 Application contains the same number of claims after this Amendment. Accordingly, no additional filing fee is due. In the event that the Commissioner for Patents should determine that any additional fee is due, then the Commissioner for Patents is hereby authorized to charge Deposit Account Number 18-2222 for the appropriate fee.

3. The Patent Examiner's very detailed analysis of the '101 Application is acknowledged with appreciation. However, the Applicants respectfully disagree with the Examiner's rejection of the '101 Application, wherein the rejection of all claims of the '101 Application is based on combination of two cited patents. The Applicants will first address the rejection of Claim 1, since Claim 1 is the only independent claim and the rest of the

1 claims of the '101 Application all depend on it.

2  
3 The Examiner is rejecting Claim 1 under 35 U.S.C. 103 (a) as being obvious in  
4 view of United States Patent No.: 4,126,451 issued to Nayar for "Manufacture Of Plates By  
5 Powder-Metallurgy" (hereafter the "Nayar Patent"), which is combined with United States  
6 Patent No.: 4,121,928 issued to Sanae Mori for "Method For The Manufacture Of Multi-  
7 Layer Sliding material" (hereafter the "Mori Patent"). After carefully reviewing the cited  
8 patents, the Applicants respectfully disagree with the rejection since the '101 Application is  
9 technically and structurally different from the Nayar Patent combined with the Mori Patent,  
10 particularly due to the invented frame composite having structural elements of the "thin  
11 skin", "boxed" frame and "uniform composition". The Applicants will illustrate their  
12 structural differences in Section 5 of this Amendment.

13  
14 However, in order to further differentiate the '101 Application from the Nayar  
15 Patent combined with the Mori Patent, the Applicants have amended all claim sections of  
16 Claim 1, where the newly amended Claim 1 through this Amendment is presented in Section  
17 4. Therefore, the amended Claim 1 is now more particularly and distinctly defined so as to  
18 overcome the rejection according to the cited Nayar Patent combined with the Mori Patent.  
19 The Applicants will discuss why the presently amended Claim 1 and the rest of the claims of  
20 the '101 Application are patentable in Sections 5, and Sections 6 to 8 respectively.

- 21  
22 4. Through this Amendment the Applicants have amended Claim 1 as follows:  
23 Claim "1. A method of producing a framed-metal-matrix-composite-plate/sheet from a  
24 powder mixture, said method comprising:  
25 a. producing said powder mixture by uniformly mixing a matrix metal powder  
26 and at least one reinforcement material, wherein said reinforcement material is  
27 selected from the group consisting of silicon carbide, silicon nitride, titanium  
28 nitride, titanium carbide, titanium silicide, molybdenum silicide, nickel

- 1 aluminate, boron carbide, aluminum nitride, aluminum oxide, magnesium  
2 oxide, gadolinium oxide, ceramic materials and mixtures thereof;
- 3 b. loading said uniformly mixed powder mixture into a metal frame being a box  
4 to form a framed mixture, further comprising compacting said framed mixture  
5 to form a framed compact of a composite having 50% to 95% of the  
6 theoretical density and uniform composition;
- 7 c. consolidating said framed compact to form a framed-billet of a composite  
8 having a uniform composition that is between about 98% and about 100% of  
9 theoretical density, wherein said consolidation further comprises degassing of  
10 said framed compact to form a degassed-framed-compact;
- 11 d. rolling said framed-billet to form said framed-metal-matrix-composite-  
12 plate/sheet without edge cracks, wherein said plate/sheet is comprised of thin  
13 skins of said frame metal, which encapsulate said metal-matrix-composite  
14 having uniform composition as a thick core; and;
- 15 e. said method results in a high sheet yield rate for producing said framed-metal-  
16 matrix-composite-plate/sheet comprising said thick core of the composite that  
17 has said uniform composition.”

18  
19 Compared with the prior claim elements of Claim 1 submitted on January 22,  
20 2008, new words and phrases have been added into Claim 1 through this Amendment as  
21 additional claim limitations, including “uniformly” in claim section ‘a’, “uniformly mixed”  
22 and “uniform composition” in claim section “b”, “a composite having a uniform  
23 composition” in claim section “c”, “having uniform composition” in claim section “d”, and “  
24 comprising said thick core of the composite that has said uniform composition” in claim  
25 section “e”. The Applicants believe that the amendment of Claim 1 is allowable since it is  
26 supported by the disclosure in the ‘101 Application.

27  
28 Regarding the amended claim section “a”, a new claim limitation “by

1 'uniformly' mixing" has been added to modify the claimed "powder mixture". The  
2 limitation "uniformly mixing" is supported by the specification: "Matrix metal powder and  
3 reinforcement material are blended uniformly at room temperature to produce the MMC  
4 mixture" (Page 6, lines 18 and 19).

5  
6 It will be appreciated that, the disclosure of powder "blended uniformly" for "  
7 produce the MMC mixture" not only discloses a structural character "uniform composition"  
8 for an initial sub-product of the uniformly blended powder mixture in the first production  
9 step of the '101 Application, but also defines such structural character "uniform  
10 composition" for the subsequent sub-products and final product in the respective subsequent  
11 steps of manufacturing the final product "a framed-metal-matrix composite plate/sheet".

12  
13 In addition, the '101 Application is silent regarding the structural character  
14 "uniform composition" for the sub-products in the respective subsequent manufacturing  
15 steps, when the Application was originally file on November 18, 2003, since such structural  
16 character is obvious to one of ordinary skill in the art of powder metallurgy regarding a  
17 product that is manufactured from using the uniformly mixed powder.

18  
19 However, in the current situation that the '101 Application has been rejected  
20 by the Examiner based on the Mori Patent that discloses a powder metallurgic product  
21 having an non-uniform structural character of the limitation "multi-layer sliding material",  
22 the Applicants believe that it is now necessary to emphasize the structural character "uniform  
23 composition" of the '101 Application by the addition of "uniform composition" into the  
24 respective claim sections "b" to "e" of the amended Claim 1. Therefore, the '101  
25 Application claimed by the amended Claim 1 can be differentiated from the Mori Patent.

26  
27 In conclusion, the above illustration demonstrates that the amendment of  
28 Claim 1, including addition of the structural limitation: "uniform composition", is based on

1 the specifically disclosed powder “blended uniformly” for “producing the MMC mixture”  
2 in the ‘101 Application, which was filed on November 18, 2003, and the amendment does  
3 not introduce new matter. Therefore, this Amendment is in compliance with 35 U.S.C. 112,  
4 and the amended Claim 1 is allowable.

5  
6 5. The Applicants will now provide analyses as to why the amended Claim 1 is  
7 patentable over the Nayar Patent combined with the Mori Patent under 35 U.S.C. § 103. In  
8 the analyses, the Applicants will first point out the structural differences between the  
9 amended Claim 1 of the ‘101 Application and two cited patents in the following Table 1.

10  
11 It is clear that, from contents of Table 1 that compare structural differences  
12 between the ‘101 Application and the Nayar Patent combined with the Mori Patent, the ‘101  
13 Patent is absolutely different from the two cited patents. The differences are:

14 a) The composite of the ‘101 Application is encapsulated by the frame metal  
15 in the shape of a box, as compared with the composite of the cited patents that is only  
16 positioned onto the respective flat “layer 14” as the “backing layer” (the Nayar Patent) and  
17 “a strip of steel 1” as the bottom structure of the products (the Mori Patent). Obviously, a  
18 flat layer of materials cannot be considered as a box. Therefore, the produced sheets/plates  
19 of the ‘101 Application are structurally different from products of the Nayar Patent combined  
20 with the Mori Patent.

21 b) The composite as the core of the materials of the ‘101 Application has the  
22 uniform composition, which is absolutely different from the non-uniform composition of the  
23 composite from the Nayar Patent combined with the Mori Patent.

24 c) The ‘101 Application discloses a technology that manufactures each of  
25 sheets/plates having the core of composite in a discrete manner, wherein each sheet/plate has  
26 a limited length in an elongated direction. In a comparison, the technology of the Nayar  
27 Patent combined with the Mori Patent manufactures composite in a continuous manner  
28 (Figure 1), wherein the composite in a coiled form has a significant length in an elongated

direction. Therefore, the coiled composite from the Nayar Patent combined with the Mori Patent is absolutely different from the sheeted/plated composite of the '101 Application.

**Table 1** The structural differences between the amended steps "b" and "d" of Claim 1 of the '101 Application and the Nayar Patent

The '101 Application, Claim 1	the Nayar and Mori Patents
<p>"a. producing said powder mixture by uniformly mixing a matrix metal powder and at least one reinforcement material, wherein said reinforcement material is selected from the group consisting of silicon carbide, silicon nitride, titanium nitride, titanium carbide, titanium silicide, molybdenum silicide, nickel aluminate, boron carbide, aluminum nitride, aluminum oxide, magnesium oxide, gadolinium oxide, ceramic materials and mixtures thereof;</p> <p>b. loading said uniformly mixed powder mixture into a metal frame being a box to form a framed mixture, further comprising compacting said framed mixture to form a framed compact of a composite having 50% to 95% of the theoretical density and uniform composition;</p> <p>c. consolidating said framed compact to form a framed-billet of a composite having a uniform composition that is between about 98% and about 100% of theoretical density, wherein said consolidation further comprises degassing of said framed compact to form a degassed-framed-compact;</p> <p>d. rolling said framed-billet to form said framed-metal-matrix-composite-plate/sheet without edge cracks, wherein said plate/sheet is comprised of thin skins of said frame metal, which encapsulate said metal-matrix-composite having uniform composition as a thick core; and;</p> <p>e. said method results in a high sheet yield rate for producing said framed-metal-matrix-composite-plate/sheet comprising said thick core of the composite that has said uniform composition."</p>	<p><u>the Nayar Patent:</u></p> <p>a) "Layer 15 is a dense layer of the consolidated chromium or chromium-alloy powder and layer 14 is a backing layer which is derived from a stainless steel punch" (Col. 8, lines 30-32, and in Figure 5), where both layer 14 and layer 15 are placed inside of a cavity 2 of a die 1 (see Figure 1); and</p> <p>b) "FIG. 6 shows a sectional view of an alternative composite product which includes an intermediate layer 16 between backing layer 14 and consolidate powder layer 15" (Col. 8, lines 35-38, and in Figure 6), and "layer 14 is a backing layer which is derived from a stainless steel punch" (Col. 8, lines 31-32).</p> <p><u>the Mori Patent:</u></p> <p>a) Title: "Method for the manufacture of multi-layer sliding material"</p> <p>b) Core of composite material has multiple layers 4', 6' and 6" of materials with different compositions (Figures 2 to 7)</p> <p>c) a method for manufacturing continuous composite materials, and</p> <p>d) Only the bottom side of the composite materials has the metal skin.</p>

From the structural differences which are summarized above including those listed in the above Table 1, it is clear that the amended Claim 1 of the '101 Application teaches the different products, as compared with the products taught by the Nayar Patent combined with the Mori Patent. Therefore, the amended Claim 1 is patentable over the cited patents. This conclusion is consistent with 35 U.S.C. § 102 and the following listed court interpretations on 35 U.S.C. § 102 according to the same product or process under the 35 U.S.C §102, particularly from "*If one prior art reference completely embodies the same*

process or product as any claim of the patent in suit, the process or product recited by the claim is said to be 'anticipated' by the prior art, and the claim is therefore invalid under 102 for want of novelty", *Shatterproof Glass Corp. v. Libbny-Owens Ford Co.* 225 USPQ 635, 644 (Page 637, the First Column), and from "Invalidity for anticipation requests that all of the element and limitation of the claim are found with a single prior art reference", and "there must be no difference between the claimed invention and reference disclosure, as viewed by a person of ordinary skill in the field of invention", *Scripps Clinic v. Genentech Inc.*, 18 USPQ2d, 1001, 1016 (Page 1010, the First column).

Therefore, the above illustration of the structural differences demonstrates that the '101 Application as claimed by Claim 1 is patentable over the Nayar Patent or the Mori Patent.

6. The Applicants further believe that the '101 Application claimed by the amended Claim 1 is non-obvious over the Nayar patent in view of the Mori Patent according to guidelines of MPEP: "To establish a prima facie case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitation. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must be both be found in the prior art and not based on applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991)" (MPEP Rev. 3, August 2005, 2100-135).

For a further illustration, MPEP states, (1) under Section "2143.01 Suggestion or Motivation To Modify the Reference" VI. The proposed modification cannot change the principle of operation of a reference": "If the proposed modification or combination of the

1 prior art would change the principle of operation of the prior art invention being modified,  
2 then the teachings of the references are not sufficient to render the claims *prima facie*  
3 obvious. *In re Ratti*, 123 USPQ 349” and “suggested combination of references would  
4 require a substantial reconstruction and redesign of the elements shown in [the primary  
5 reference] as well as a change in the basic principle under the [primary reference]  
6 construction was designed to operate.” 123 USPQ at 352 ( MPEP Rev. 3, August 2005;  
7 2100-138); (2) under Section “2143.03 All Claim Limitations Must Be Taught or Suggested”  
8 “To established *prima facie* obviousness of a claimed invention, all the claim limitation must  
9 be taught or suggested by the prior art.” *In re Poyka*, 180 USPQ 580 (MPEP Rev. 3, August  
10 2005, 2100-139).

11  
12 Following the guidelines of MPEP, the Applicants provide the following  
13 analyses to demonstrate that it is incorrect for the Examiner to combine the Nayar Patent  
14 with the Mori Patent for rejecting the ‘101 Application

15  
16 6.1 A combination of the Mori Patents does change the mode of  
17 operation of the Nayar Patent if they are combined with

18 It is clear that the way that the Nayar Patent manufactures the  
19 composite is in a discrete fashion, which is similar to that manufacturing method of the ‘101  
20 Patent. However, the Mori Patent discloses a procedure in a continuous manner to make the  
21 composite in the coiled form. Therefore, it does change the mode of operation of the Nayar  
22 Patent if it is combined with the Mori Patent.

23  
24 In addition, the Nayar Patent discloses the structural character of the  
25 product having a thick backing layer and thin core composite material (see detailed  
26 illustration from the prior amendment dated January 22, 2008), which contradicts a structural  
27 character of the Mori Patent having a thin backing layer and thick core composite material.  
28 These lead a conclusion, if combining with the Mori technology, the Nayar Patent would



1 certainly change its mode of operation.

2  
3 Therefore, based on a court finding that “*If the proposed modification*  
4 *or combination of the prior art would change the principle of operation of the prior art*  
5 *invention being modified, then the teachings of the references are not sufficient to render the*  
6 *claims prima facie obvious. In re Ratti, 123 USPQ 349*”, which is also listed in MPEP Rev.  
7 3, August 2005; 2100-138, the Applicants believe that the Examiner’s rejection of Claim 1 is  
8 incorrect from his reasoning of “obviousness”.  
9

10 6.1 A combination of the Mori Patents does not give reasonable  
11 expectation of success of the Nayar Patent if they are combined with

12 As claimed in the Nayar Patent, one of the objects of the invention is  
13 to provide products of the powder metallurgy having a uniform composition (see Examples  
14 2, 4 and 6 that the powder is a uniform mixture). However, the objective of the Mori Patent  
15 is aimed at producing a multi-layer sliding material (Abstract). What the Mori technology  
16 does is to include dispersing a second layer of powdered materials onto a first layer of  
17 powdered materials that are different from the second layered materials, so that a composite  
18 that is manufactured has nonuniform composition. Therefore, the Nayar Patent will  
19 definitely fail its object if combining with the Mori Patent. In conclusion, following the  
20 court finding that “*Evidence showing there was no reasonable expectation of success may*  
21 *support a conclusion of nonobviousness*” *In re Rinehart, 189 USPQ 143*; MPEP Rev.3,  
22 August 2005, 2100-139, the Applicants believe that Claim 1 of the ‘101 Application is not  
23 obvious over the Nayar Patent which is combined with the Mori Patent, and should be  
24 patentable.  
25

26 6.3 Rejection of the ‘101 Application based on a combination of the Nayar  
27 Patent and the Mori Patent violates a criterion of being obviousness  
28 that all claim limitations must be taught or suggested

1 The Applicants believe that the amended Claim 1 of the '101  
2 Application is nonobvious over the combination of the Nayar Patent which is combined with  
3 the Mori Patent following a criterion that the claimed section claim "e. said method results in  
4 a high sheet yield rate for producing said framed-metal-matrix-composite-plate/sheet  
5 comprising said thick core of the composite that has said uniform composition" is not taught  
6 from the Nayar and Mori Patents. Particularly, the Nayar Patent does not teach the high  
7 sheet yield rate, and the Mori Patent does not disclose the uniform composition. Therefore,  
8 the rejection of the '101 Application claimed by Claim 1 is inconsistent with the court  
9 finding that "*To established prima facie obviousness of a claimed invention, all the claim*  
10 *limitation must be taught or suggested by the prior art.*" *In re Poyka*, 180 USPQ 580; MPEP  
11 Rev. 3, August 2005, 2100-139. In other words, the '101 Application should be patentable.

12  
13 In conclusion, from the above analyses in Sections 6.1, 6.2 and 6.3, the  
14 Applicants have demonstrated that the amended Claim 1 of the '101 Application is  
15 nonobvious over the combination of the Nayar Patent which is combined with the Mori  
16 Patents, where the analyses follow instructions of MPEP, Section 2143 Basic Requirements  
17 of a *Prima Facie* Case of Obviousness, Rev. 3, August 2005, 2100-135 to 2100-140.  
18 Therefore, the Applicants request the Examiner to allow the amended Claim 1 of the '101  
19 Application to be patented.

20  
21 7. Analyses As to Why the Claims 1-2, 4-5, 7-15 and 17-21 of the '101  
22 Application are Allowable

23 The above analyses demonstrate that the independent Claim 1 is in the  
24 allowable form. Therefore Claims 1-2, 4-5, 7-15 and 17-21 are also in the allowable form  
25 since they are dependent upon the allowable Claim 1. This conclusion is supported by the  
26 court finding: "*If an independent claim is nonobvious under 35 U.S.C. 103, then any claim*  
27 *depending therefrom is nonobvious.*" *In re Fine*, 5 USPQ2d 1596; MPEP Rev. 3, August  
28 2005.

1           8.     Analyses As to Why the Claims 3 and 6 of the '101 Application are  
2 Allowable

3           The above analyses demonstrate that, compared with the Nayar Patent  
4 combined with the Mori Patent, the independent Claim 1 is in the allowable form based on  
5 the structural limitation "a high sheet yield rate for producing said framed-metal-matrix-  
6 composite-plate/sheet comprising said thick core of the composite that has said uniform  
7 composition". Regarding the Lowrance Patent (US Patent 5,382,405), which is cited by the  
8 Examiner to reject Claims 3 and 6, it also clear that the Lowrance Patent does not disclose  
9 such structure limitation. Therefore, Claims 3 and 6 are in the allowable form since they are  
10 dependent upon the allowable Claim 1, and supported by the court finding: "*If an*  
11 *independent claim is nonobvious under 35 U.S.C. 103, then any claim depending therefrom*  
12 *is nonobvious.*" *In re Fine*, 5 USPQ2d 1596; MREP Rev. 3, August 2005.

13  
14           9.     Analyses As to Why the Claims 16 and 22 of the '101 Application are  
15 Allowable

16           Claims 16 and 22 are dependent claims, which are dependent upon the  
17 independent Claim 1. From the above analyses that compare the Nayar Patent combined  
18 with the Mori Patent, the independent Claim 1 is demonstrated to be in the allowable form  
19 based on the structural limitation "a high sheet yield rate for producing said framed-metal-  
20 matrix-composite-plate/sheet comprising said thick core of the composite that has said  
21 uniform composition". In addition, it is clear that the Japanese Patent 61194101A, which is  
22 cited by the Examiner to reject Claims 16 and 22, also does not disclose such structure  
23 limitation. Therefore, Claims 16 and 22 are in the allowable form since they are dependent  
24 upon the allowable Claim 1. This conclusion is consistent with the court finding: "*If an*  
25 *independent claim is nonobvious under 35 U.S.C. 103, then any claim depending therefrom*  
26 *is nonobvious.*" *In re Fine*, 5 USPQ2d 1596; MREP Rev. 3, August 2005.

27  
28           10.    In conclusion, through this Amendment the Applicants have defined the

1 claims of the invention more particularly and distinctly so as to overcome the technique  
2 rejection. Since the claims define a novel structure which is new and not anticipated by the  
3 cited prior references, the Applicants submit that such claims are clearly patentable.  
4 Therefore, it is respectfully submitted that the present '101 Application is now in condition  
5 for allowance and issuance of a Notice of Allowance of the '101 Application is respectfully  
6 solicited.

Respectfully submitted,

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8  
9 Date: August 25, 2008

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